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The Second Industrial Revolution

By Clyde E. Dankert*

A glance at any large dictionary (such as Webster's New International) will reveal the fact that there are a great many words in the English language that begin with the prefix "auto." Among the more common ones are "automatic," "automobile," and "autobiography." Less familiar are such words as "automaton," "autogenous," and "autophon." During the past year a new word with the "auto" prefix came into great prominence and it seems certain of becoming one of the most widely used terms in the list. The new entry is, of course, "automation." As with other words having the same prefix, automation embodies the idea of "self" or "same."

The word automation is an American product. Interestingly enough, it sprang from the brain not of one person but of two. Mr. D. S. Harder, an official of the Ford Motor Company, was one of the originators of the term, and appears to have been the first person to use it. Mr. John Diebold, a young engineer and management consultant—and author of a very interesting and informative book entitled *Automation*—was the other originator. The word did not attract much attention for the first five or six years; but about two years ago it began to "make" the headlines and it has been there ever since.

Automation, as a word, is now firmly established in the English language and all the dictionaries, both big ones and little ones, will have to recognize the fact in their next editions. Intelligent citizens, including teachers of the social studies, will also have to recognize the fact. Indeed, if they are to remain fully intelligent they must without further delay add the word to their vocabulary and be ready to use it whenever occasion arises! And the occasions are bound to be numerous.

But what does the word automation mean? The new term has been defined, or described, in a great many ways. A writer in *The CIO News* refers to automation as "the use of automatic machinery automatically controlled." In somewhat similar vein the editor of *Instruments and Automation*, one of the technical journals in the field, declares that automation "means basically the use of automatic control by instruments."

A more elaborate and informative definition, and one that suggests the kind of "instruments" that may be used in the exercise of the automatic control, emanated from the First International Automation Exposition, held in New York in November, 1954. Automation, according to this definition, is "the substitution of mechanical, hydraulic, pneumatic,

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electrical, and electronic devices for human organs of observation, decision, and effort, so as to increase productivity, control quality, and reduce costs."

The last definition states, and the other definitions imply, that under automation control instruments take over work that has previously been done by human beings. This work, it should be emphasized, is not merely physical work. To a very considerable extent it is mental; it relates to the making of observations and reaching of decisions. It is this feature of automation that gives it such great economic and social significance, and that marks it off from much of the technological change of times past.

A final definition, or at least descriptive statement, is that automation is "the push-button civilization Theseus represents." It should be noted that in this context Theseus is not the ancient Greek hero, but a mechanical mouse that was born in the laboratory of the Bell Telephone Company in 1952. Theseus possesses an electrical brain and has the uncanny ability of locating hidden pieces of electrical "cheese," which for a mouse of any kind is surely the supreme achievement. The general importance of Theseus and his structural characteristics are set forth in the following statement by John Lear, in a recent issue of *The Saturday Review*: "The wire of his whiskers, the electrical switches in his brain, the bar magnet that serves as his backbone, and the wheels on which he travels have become the collective symbol of the machine's ability to duplicate reiterative processes man has employed for generations."

From the preceding definitions and observations some idea of the nature of automation can be formed. It is clear that automation involves a very extensive application of the principle of automaticity. This principle, it is well to emphasize however, is by no means new. It has been used in industry for many years. A particularly good example of its early application, and one sometimes cited in discussions of automation, was the flour mill of the early American inventor, Oliver Evans. Another outstanding example was the invention made by the Frenchman, Joseph Jacquard. Very early in the last century Jacquard successfully applied the punched-card technique, which is now often used in processes that have been automated, to the operation of looms.

Though the application of automatic methods to industry is not new, the fact remains that the use of these methods has in the last fifteen years reached a stage of development far beyond anything achieved in the past. Much of this progress has been due to the strong incentive given to the study and application of the theory of "control"—by such men as Professor Norbert Weiner, author of *Cybernetics* and *The Human Use of Human Beings*—during the period of World War II. After the war ended extensive work in the field of control continued, but with increasing reference to its industrial use, and this trend has gone on.

The use of control devices is of basic significance in automation. A highly important principle that is used in applying the control is known, technically, as "feedback." In speaking of feedback we are in the realm of cybernetics though, like M. Jourdain with respect to the use of prose, we may not be aware of the fact. The word "cybernetics," which was coined by Professor Wiener, means the "study of messages, and in particular the effective messages of control." Under the operation of feedback, messages are sent from one piece of mechanism to another. That is, messages are fed back from one stage in a productive process to an earlier stage without—and this is of predominant importance—the aid of any human being. Moreover, the messages are acted upon; they lead to "self-correction" in the processes that are involved. To revert to one of the definitions we cited a few paragraphs back, not only human observation but human decision and effort are replaced by mechanical devices.

The feedback principle, which is well illustrated by the ordinary thermostat, is simetimes referred to as "closed-loop control." This means a type of control that is completely automatic. The opposite is known as "open-loop control." If instead of a thermostat setting in motion forces that would open or close drafts in the furnace, one had to pull up or let down a chain whenever he noticed the thermostat at an unsatisfactory level, the type of control examplified would be of the latter type. To no small extent automation represents the difference between the two types of control. In fact, John Diebold has gone so far as to state that "fundamentally, automation is the process of closing the control loops of industry." It should be noted, however, that sometimes the term automation is used in a more comprehensive fashion than this. It may even be made synonomous with all technological improvements; but this use of the term is clearly undesirable.

The control instruments used under the principle of automation have two broad areas or kinds of application. They may be used on single machines performing a given operation or set of operations; or they may be tied together into a system of controls, involving the linking up of a number of machines. The culmination of the latter type of control is the so-called automatic factory, about which we shall hear more and more as the years go by.

Another outstanding characteristic of automation is the use of computing machines, especially the "giant-brain" variety. The latter machines, which have been given such names as *Univac* (from "Universal Automatic Computer"), *Eniac*, and *Maniac*, as well as *IBM 720*, can do amazing things with figures. For example, it has been said that *Maniac* can solve an equation involving 10 million mathematical operations in the short space of 48 minutes! Some of these machines are already being used in business enterprises, but their employment in industry has really just

started. To an increasing extent such processes as payroll, accounting, and inventory work will be brought within their domain, especially when the prices and rental fees of the machines are reduced. At the present time the rental fee on one of the machines is $20,000 a month. But some of the computers are now being made available at centralized points on an hourly rental basis. One company has recently announced that its charges will range from $445 an hour on large computers to $15 an hour on small ones. The possibility of obtaining the use of these computing machines for shorter spaces of time will probably encourage their wider use.

The "giant brains" are extremely valuable in processing data. But their potential use goes farther. It is expected that they will be useful as central control devices when the highly developed automatic factory arrives.

Automation has been hailed by some persons as "The Second Industrial Revolution." The expression seems a bit misleading and inaccurate. There can be no doubt, however, that the automation movement, accompanied as it is by the ordinary, day to day improvements in technology, will have profound effects on the lives of the American people—and of people everywhere. Already, as a matter of fact, such effects are being felt; and they will be felt with increasing intensity in the years ahead when to the expanding influence of automation there is added the industrial use of atomic energy. Without asking ourselves what the more remote prospects of these momentous developments are, let us inquire briefly into some of the changes that are nearer at hand.

To begin with, it should be pointed out that there have been wide differences of opinion concerning the nature of some of these effects. A labor writer declares that "Loss of jobs on a tremendous scale tops the list of problems presented by the spread of automation." Another writer has as the title of an article on the subject, "Labor on the Hook." On the other hand, an employer representative has stated that automation has become "a menacing word—a bogeyman with which to frighten our people." And another person has said that "Technological unemployment is a spectre that has yet to materialize."

The chief controversy concerning automation centers around the question of unemployment. Some persons fear that large numbers of workers are going to be displaced by the new techniques. Others minimize the extent of this particular result. In fact, some say that automation does not cause technological unemployment at all. This last conclusion is an interesting and also a very misleading one. It can be reached only by defining the term "technological unemplyoment" in a special way.

It must be granted that automation does not cause, in "the long run," a decrease in the total number of employment opportunities. If by technological unemployment one means such a situation, then one can state

truthfully that there is no such thing as technological unemployment. But, like the mechanization of industry in times past, automation does cause a shrinkage of some types of employment and results in a certain amount of labor displacement. In a dynamic economy like ours new employment opportunities will arise, but some of the displaced workers may not find it easy to move into the new jobs. Until they do move into them these workers are technologically unemployed. Viewing the matter realistically, it must be said that technological unemployment cannot—and should not—be done away with by waving the magic wand of a definition.

But how serious is such unemployment likely to be? One cannot answer this question with any degree of precision. A few generalizations can be made, however. At any given time there is likely to be a certain amount of technological unemployment. The labor reabsorption process does not always take place simultaneously with the labor displacing process. In a sense, then, we have "permanent" technological unemployment.

The volume of such unemployment, however, will not become larger and larger. The amount that exists at any given time depends on such factors as the speed with which new methods are introduced into industry; the degree of labor mobility (both occupational and geographical); the way in which the monetary gains resulting from the technological improvements are shared between consumers, wage earners, and employers; and the level of economic activity. In some localities the volume of technological unemployment is likely to be serious, and positive steps should be taken to cope with it. Viewing the nation as a whole, however, the volume of such unemployment will not reach mass proportions.

Another result of automation, and it is very closely tied up with the one we have just discussed, relates to the quality of the labor force. Automation will bring about—it will necessitate—an upgrading of the workers. In industries that are highly automated most unskilled workers, and even many semiskilled workers, will find their limited qualification no longer adequate. Control instruments, in the processes in which they are used, will be able to do the observing, the decision-making, and the initiation of action. Thus there will be an extensive displacement of labor "performing judgments of a low level," to use Professor Wiener's terminology. Much of the labor needed will have to be of higher quality, it will have to possess technical ability. The adjustments that this will require will be extensive and involve some serious implications.

Turning now to a number of other results of automation, one finds general agreement that the new techniques will lead to higher material living standards. More and more goods will be made available to the populace, and in some instances these goods will be of improved quality.

All members of the public will not share equally in the increased outpouring of the products of industry. Some groups, such as electronic engineers and the members of certain strong unions, will share very generously because of the strategic or powerful place they occupy in the economy. Other groups, including high school and college teachers, will benefit only moderately.

The gains in productivity will, in the second place, lead to a larger amount of leisure time for most persons. Within the next ten years the standard work-week in many, if not most, industrial and commercial employments will drop to around 35 hours a week. The six-hour day that Sir Thomas More prescribed for the subjects of his imaginary commonwealth will no longer be regarded as utopian. In fact, considering this standard on a weekly basis it will probably be looked upon as a little long.

At the same time that automation makes possible shorter hours, the actual attainment of shorter hours will help to cushion the unemployment impact of the new industrial developments. But a reduction in the length of the work-week will not act as the permanent solution to the problem of technological unemployment.

There will be a tendency for the shorter hours achieved by automation to be concentrated in fewer days. The four-day week is already being seriously considered and there can be little doubt that by 1965 it will be established in no small number of plants. The social and economic effects of such a work-week, with its long week-end, will be profound and far-reaching. These effects will be intensified by the establishment of still longer vacations. The unions are steadily pressing for vacations of longer duration, and their efforts have been meeting with success. This pressure the unions will continue to exert, perhaps with increasing force, as automation continues to unfold.

Automation will not only lead to the results just described but it will produce still other results. It will have some effect on the location of industry; it will possibly be a factor in further industrial consolidation; it will bring about changes in the subject matter of collective bargaining; it may lead to some standardization of production, at the same time that it improves the quality of production. Automation will also create a variety of social problems, including some important ones impinging on our educational system. The training of a more highly skilled labor force and the education of people for a wiser use of their leisure time are two problems of immense magnitude.

As the automation movement develops in other countries—and in some of them it is making definite headway—they too will experience results similar in their general nature to those just indicated. In some countries, especially those that are backward economically, automation will also lead indirectly to a more rapid rate of population growth.

The Agricultural Towns of Southern New England, 1790-1830

By George Rogers Taylor*

Agriculture in most of the small, inland towns of Massachusetts reached its maximum limits in the period 1790-1830. The story is reflected in the statistics. A sample of these is shown in the following table:

Population of Three Massachusetts Towns

Year	Sturbridge	Pelham	Ware
1790	1,704	1,040	733
1800	1,846	1,144	997
1810	1,927	1,185	996
1820	1,633	1,278	1,154
1830	1,688	904	2,045
1840	2,005	956	1,890
1850	2,119	983	3,785
1860	2,291	748	3,597
1900	2,058	462	8,263

Sturbridge remained almost stationary in population for a century. Pelham, a typical hill town, reached its peak in population in 1820 and then slowly declined for about one hundred years. Ware developed factory industries and grew irregularly throughout the nineteenth century.

Wherever one walks in the wooded hills of New England today he is likely to come across stone walls (fences) which the farmers of an earlier period built by the most toilsome labor. Originally they enclosed cultivated fields, the mowing, or land devoted to pasture. Today they are tumbled-down and vine-covered, almost lost in the forests which again possess the hillsides. Most of these stone walls were built before 1820; very few have been constructed since then.

By 1820 farmers in New England towns were hard pressed to preserve their standard of living. Agricultural prices remained depressed after 1819, transportation to market was difficult and expensive, a flood of western produce was just beginning to enter eastern markets and in few towns was there much additional land which could be easily cleared for tillage. But families were large, population was growing at an extremely rapid rate and farmers were looking desperately for means by which to relieve their situation.

Some of the important ways in which they sought to do this are out-

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lined below: (A study of most any town in Southern New England would probably throw light on each of them.)

1. They attempted to introduce improved agricultural methods (e.g., the iron plow and crop rotation) and to experiment with producing new products (e.g., Merino sheep, broom corn and mulberry trees).

2. They tried to improve transportation. The great turnpike-building era in Southern New England resulted. Improved roads facilitated travel but wagoning produce any appreciable distance remained prohibitively expensive.

3. A few farmers set up small factories or shops to provide, on a very small scale and mostly for local markets, useful items such as harness, trunks, brooms, chairs, sleighs, wagons, scythes and shuttles.

4. They turned to manufactures which employed women and children at home. This domestic or putting-out system of manufacture had its

(Continued on Page 16)

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The Suggestiveness of Mr. Holmes

By John W. White*

When Dr. N. T. True said of Ezekiel Holmes that the crowning element of his character might be best explained by the word *suggestiveness*, he probably came as close as anyone can ever come to giving articulate expression to the peculiar genius of a man who was an *Educationalist* in the broadest sense of the word. Although engaged for the greater part of twenty-five years in formal education, he was one of those rare persons who could not be confined to the classroom, but made the community his student body, the chief occupations of the work-a-day world his subject matter, and the borders of his adopted state, Maine, the walls of his school house. All this, and more, he did in a state in which the last vestiges of the frontier still existed into the seventh decade of the 19th century. Speaking of Ezekiel Holmes in 1865, Dr. True says, "Probably no other man in the State of Maine could propose to a good account everything that came up before him as could Mr. Holmes."[1]

Ezekiel Holmes was born in Kingston, Massachusetts, on August 24, 1801, the son of Nathaniel Holmes and Asenath Chandler. He was "fitted" for college under the Reverend Samuel Parris[2] and entered Brown University at the age of sixteen. At Brown, Holmes developed an interest in natural history in general and botany and mineralogy in particular. Not conspicuous for his studies, he hated to be cramped by the routine of classes and required reading, but preferred rather to let his mind run in the natural channels of his particular interests.[3] Shortly after his graduation in 1812, Holmes went to Paris, Maine, where he entered upon the study of medicine in the office of his uncle, Dr. Benjamin Chandler. While engaged in his studies, he taught in the community high school and attended lectures at the medical school at Bowdoin College, obtaining his M. D. in 1824.[4] True records that Holmes was more interested in investigating science for the love of truth than from expectation of pecuniary reward.

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* Mr. White is a teacher of social studies in the Weymouth (Massachusetts) High School.

1 True, N. T., "Biographical Sketch of Ezekiel Holmes, M.D.," *Tenth Annual Report of the Secretary of the Maine Board of Agriculture*, 1865 (August, 1865), p. 220.

2 True records that "Mr. Parris had charge of all schools in Kingston, four in number, making three months in each district. He had a class fitting for college that followed him from one district to another. Mr. Parris finally gave up his itinerant mode of teaching, and opened an academy when the class in which Dr. Holmes was a pupil finished his preparatory studies."

3 At Brown, Holmes studied under Professors John D. Wolf in chemistry, and Solomon Drowne, an enthusiastic botanist. *Ibid.*, p. 207.

4 In the medical school Holmes worked under Professors Nathan Smith, John D. Wells, and Parker Cleveland (chemistry).

In 1825 he married Sarah E. Benson of Livermore and settled in Gardiner. Although he acquired and continued a small medical practice[5] during much of his life, other interests filled his mind. For the teacher—or *Educationalist*, as Holmes was called in his own day—there was nothing more challenging than a segment of the populace uniquely in need of just that intellectual and practical commodity which would be the product of his labors. Accordingly, Holmes accepted the position of teacher of natural sciences in the newly established Gardiner Lyceum.[6] Founded in 1821 through the munificence of Robert H. Gardiner, it was the aim of the Gardiner Lyceum to furnish an education for young men desirous of becoming "mechanics and farmers" while earning a portion of their expenses. The unusual nature of the undertaking attracted wide attention to the school and invited comparison between it and the Cooper Institute of New York, although it was on a far more modest scale.[7] In 1829 Holmes was elected principal, succeeding the Reverend Benjamin Hall, D. D., of Bowdoin who became professor of chemistry at Dartmouth and later President of Geneva College, New York. In that year also Holmes published a monthly periodical, *The New England Farmers' and Mechanics' Journal*, a venture lasting one year, followed in 1831 by editorial work on the *American Standard*.

As a teacher Holmes was not a rigid disciplinarian, but rather sought to inspire in his pupils a love for study. During his years at the Gardiner Lyceum, he "devoted his time and money to the institution as no teacher should do"[8] and was, in fact, then and throughout the whole of his life,

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[5] True recalls of Holmes that "He had not the courage of the surgeon; his head was too full of sympathy for his patient. [He]... was ill adapted in his nature to be jostled about by a competitor, but chose rather to let his thoughts run upon subjects more congenial to his tastes." True, *op. cit.*, p. 217.

[6] *The New England Farmers' and Mechanics' Journal*, Vol. 1, No. 1, January 1828, p. 24, announced, "Those Mechanics who are desirous of obtaining knowledge which will be of daily practical use to them, and which can be obtained in few other institutions in the United States, would do well to embrace the opportunities now offered them.... expenses... cannot be an objection. Those who are not able to pay for tuition, can have it gratis; and as it regards the board, it may be paid in whole or in part by labor."

Typical enthusiasm for the Lyceum movement among contemporaries of Mr. Holmes is shown in the article "The American Lyceum, 1829," *Old South Leaflets*, Vol. VI, No. 139, p. 293.

[7] The real nature of the urgency of the teaching of these young men can only be appreciated when it is recalled that at this time and in this region even the limited scientific knowledge regarding agriculture was viewed with suspicion. *The Dictionary of American Biography* (New York, 1932), Vol. IX, notes that such was known as "book farming."

[8] True, *op. cit.*, p. 211. *Dictionary of American Biography* also makes mention of this trait in Holmes' character. Holmes' enthusiasm is well expressed when he wrote, "Now, every avenue of science is thrown open to them (Mechanics) and every facility and encouragement given them to enter and store their minds with such knowledge as will make them learned and wise. They are looked upon as the bone and sinew of the republic,—as the hope of a mighty nation." *The New England Farmers'... Journal*, Vol. I, No. 1, p. 12.

a man as blind to his own interests and reputation as he was far-seeing in the interests and service of others—a man continually ahead of his time.

Waterville (now Colby) College—which had awarded Holmes an honorary degree of Master of Arts in 1821—appointed him lecturer on chemistry and natural history in 1833. The previous year he had moved to Winthrop, the town that was to be his home for the remainder of his life. During his four years at Waterville College[9] he assumed the duties of superintendent of the common schools of Winthrop, serving in that capacity until the last years of his life. After 1833, at a time when these were the only agricultural publications in the state and among the few in the nation, Holmes edited the newly established *Kennebec Farmer*, later the *Maine Farmer, and Journal of the Arts.*

Through the medium of both the *Maine Farmer* and later the first agricultural society in the state, incorporated in 1855 as the Maine State Agricultural Society with Holmes as its secretary, "he passed through the most disagreeable of all ordeals, the banishment of superstitious notions in agriculture which had enslaved man since the flood."[10] So occupied was he with agricultural and scientific interests—with the improvement and progress of the useful arts—that he found time for little else.

When in 1837, there awakened within the state a spirit of public improvement—especially with reference to the development of its natural resources—the legislature caused a geological survey of the state to be taken. Through the land agent, acting under the direction of Dr. C. T. Jackson, Holmes was appointed to conduct a survey of the Aroostook Territory. He was expressly directed to examine the region and evaluate its potentialities with reference to further settlement.[11] That he would accept the appointment and perform the duties in an altogether competent and admirable manner was a foregone conclusion in 1837, but that he would be so ardent and eloquent in his presentation of the potentalities of the Aroostook Region could not have been hoped for even by those most familiar with his gift of infectious *suggestiveness.*

His official report to the Board of Internal Improvement had much to do with the awakening of the public mind toward settling the Aroostook Territory.[12] Among weather observations and geological and topo-

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9 True, *op. cit.*, p. 211, indicates that the short tenure at Waterville College was due to the fact that he found the distance too great to travel and the pay too low.

10 *Ibid.*, p. 212.

11 Holmes, E., *Report of an Exploration and Survey of the Territory on the Aroostook River during the Spring and Autumn of* 1838 (Augusta, Maine, 1839), p. 3.

12 True, *op. cit.*, recorded in 1865 that "Thousands of emigrants within a few years moved in, and have since made for themselves good farms and comfortable homes." In this connection also see Chapter One of my unpublished master's thesis (University of Maine), *The Bangor and Aroostook Railroad, The County It Serves and the People Who Built It.*

graphical findings, he found numerous opportunities to extol the virtues of the region.

> GENERAL REMARKS.—REFERENCES. It will be natural to inquire what are the resources of this part of the state? I answer, they are obviously more than are found in many tracts embracing the same amount of territory. In the first place the lumber stands most prominent. At present it is the best portion of Maine. . . . *Second*—The large amount of good soil. . . . *Third*—its mineral resources, especially lime, will be a source of profit and comfort to the residents. . . .
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> OBJECTIONS TO THE COUNTRY. It will be also natural to ask what are the objections to settling in this country?. . . The emigrant who goes into the forest to prepare to make a farm for himself, must reflect before he leaves the pleasant abodes and cultivated fields where he has been wont to enjoy the accumulated convenience of years of toil and labor, that he must of necessity leave these behind, and take the world in the "rough" as it were. He must remember, that he goes there, not to find the pleasures or the refinement of the town or the city, but to create them for himself—to manufacture them, so to speak, from the raw material—to establish and build himself up from small and mayhap from humble beginning.[13]

Holmes' lifelong interest in education and refinement, and something of his own philosophy of life as well, became evident in his concluding remarks in the same report.

> WANT OF SCHOOLS AND RELIGIOUS PRIVILEGES. All new countries are liable to this objection. It is one which, for the first few years, is almost inevitable; but it is never the less astonishing how soon the New Englanders make arrangements to meet these wants. Almost before they have procured the necessary buildings for their own protection, and ere the "first burn" has done smoking, the school mistress may be seen, with a bevy of urchins about her, listening to her instruction; and the missionary is made welcome to the settlement, and the utmost atten-

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[13] Holmes, Ezekiel, *Report of an Exploration and Survey of the Territory on the Aroostook River During the Spring and Autumn of* 1838 (Augusta, Maine, 1839), p. 75.

tion given while he leads in the devotional duties of the Sabbath.

The lack of intelligent and refined society operates as an objection in the minds of many... but on the other hand, if you do not find the refinements, you also do not find many of the follies which too often accompany those refinements, and make fashionable life ridiculous. As for intelligence, the Yankee who goes into the wilderness or elsewhere, carries it with him, and the schools before mentioned are sure to perpetuate it.

Should you advise me to go to the Aroostook? is a question often put. Before answering this, I would use the characteristic privilege of asking you who are you?

If you are already well situated—have a good farm—live in a pleasant neighborhood, and are blessed with the common goods and chattels necessary for the well-being and happiness of your family, stay where you are—go neither east or west. Are you a man of feeble health, with little capital, unable to undergo the severe toils of subduing the forests, and unable to hire? It would not be advisable for you to go there. Are you idle—lazy—shiftless and vicious? Go not thither. Better stay where (if you cannot reform) alms houses and prisons are more abundant to minister to your necessities, or to ensure your safe keeping.

Are you in straitened circumstances, but in good health, with a robust and hardy family of children to assist you? Go to the Aroostook. If possible, take a supply of provisions with you to last until you can get a crop—select a good lot of land, be prudent and industrious, and in three years you can look around upon your productive acres and your well filled garners with satisfaction. Are you a man just starting in life, but with no capital, save a strong arm—good courage, and a narrow axe? Go to the Aroostook; attend assiduously and carefully to your business; select a lot suitable for your purpose, and with the common blessings of providence, you will, in a very few years, find yourself an independent freeholder, with a farm of your own subduing, and with capital of your own creating.[14]

Holmes was not without recognition for his contributions to life and

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[14] Holmes, *op. cit.*, pp. 77 f.

culture in Maine, but much of this came to him in the form of calls into public service—none in terms of financial rewards for services already rendered.[15] Aside from his official connections with formal education, he served as representative to the state legislature from Winthrop, 1835-39 and again in 1850, as senator from Kennebec County, 1840-41, and was Liberty Party candidate for governor in 1852 and 1853. When the Maine State Agricultural Society was incorporated in 1855, Holmes became its first Secretary and served in that office until his death. He was appointed naturalist (and C. H. Hitchcock of Massachusetts, geologist) to conduct a scientific survey of the State of Maine in 1861.

Fittingly enough, it was while appearing before a state legislature committee in favor of the establishment of a separate agricultural college that Holmes was fatally stricken. He died on February 9, 1865, leaving little of worldly value to his widow and two children, yet of his passing the Maine legislature concluded: "Death has removed all that is mortal of him to the grave, but his character and labors will continue to exert a benign influence for the public weal."[16] Probably no more fitting tribute could be paid to Holmes—or any more honorable memorial aspired to by any teacher—than Dr. True's:

> He had not a giant intellect. There were no outbursts of eloquence on great occasions, no brilliant discoveries in science, no tide of public favor on which to ride into political power. He passed on in the even tenor of his way, as the useful citizen, dispensing his knowledge as a good teacher, without particularly caring for his reputation. Conscious that the principles he was advocating were those of truth, he scattered them broadcast over the land, never doubting but in due time a bountiful harvest would result.[17]

It is altogether fitting, for us and for those who follow after us, that Ezekiel Holmes' *suggestiveness*, as well as those other personal qualities that served to make him a good companion and friend in his own day—his modesty, his sincere altruism, his sense of humor, even his inability to "turn a dollar"—,[18] should be recognized as a vehicle of communication

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[15] Holmes himself said (in a letter to True) that he "went into the work poor, and returned poorer." True, *op. cit.*, p. 216.

[16] *Ibid.*, p. 225.

[17] True, *op. cit.*, p. 219.

[18] *Ibid.* "As a companion he was congenial... a pleasant stock of good humor would always put everyone around in the same state of mind." (p. 219). An unidentified Winthrop resident is quoted as saying, "He was generous and public-spirited to a fault.... No man, woman, or child was ever turned away from his door empty handed.... We have not his equal."

to the teacher and the scholar, as well as the citizen-at-large, today. That he has remained so obscure, having as yet had no biographical pieces of any length or scholarly dignity published[19] concerning his life and work, is at once an indictment of scholars in the field and a challenge to students of New England history and culture. Certainly no more dedicated member of what Coleridge chose to call the "clerisy"[20] could be found among early nineteenth century educators—either in New England or on the frontier (Holmes serving both)—than this quiet searcher after truth who could project his imagination from the actuality of the wild frontier to create a vision of bountiful harvests and freeholding citizens living in dignity and security.[21] More than that, he felt the obligation—and had the power—to share his vision and his enthusiasm. His devotion to what was his duty, as he saw it, never shunning the opportunity to suggest a practical way of implementing his vision for the future (in an area where practical implementation was as important as imaginative vision), goes far toward qualifying him for a position of eminence in that select body of dedicated individuals who are at once truth-seekers and teachers.

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19 After completing this paper, the author learned that a master's thesis (University of Maine) was written on Holmes recently and that its publication is likely. Unfortunately, this author has not had the opportunity of examining either the thesis in point or the source material for it.

20 Russell Kirk uses this term in his provocative new book, *Academic Freedom*, to convey the idea—as did Coleridge—that the dedication of the teacher to a spiritual search for truth bears a close resemblance to the dedication of the clergy.

21 Holmes's influence in getting the northern frontier settled "was of a far greater value in erecting a barrier against foreign encroachment than a line of forts in any unbroken forest from Canada to the Atlantic." True, *op. cit.*, p. 215 Holmes was far more interested, however, in providing the citizen with the knowledge by which he could effectively insure his own economic and political security.

AGRICULTURAL TOWNS (Continued from Page 9)

greatest period of development in New England from about 1820 to 1850. Straw and palm-leaf hats, shoes, galluses and many other items were made in farm homes and collected by itinerant middlemen.

5. But none of these expedients sufficed to give sufficient profitable employment to the expanding farm population. So increasingly relief had to come from migration to:

a. The rapidly growing factory cities, and
b. New lands being opened up in Northern New England and on the Western frontier.

Book Reviews

STUDYING YOUR COMMUNITY. By Roland L. Warren (New York: Russell Sage Foundation, 1955. 369 pp. $3.00.)

Written primarily as a guide for laymen and professional workers interested in surveying community needs and initiating action programs, *Studying Your Community* is a valuable reference for the teacher of Community Civics, Problems of Democracy, or related courses. The book covers in separate chapters fifteen aspects of community life from economy and education to associations and intergroup relations. Each chapter contains considerable background material: a concise statement of the purpose and functions of that aspect of community life under discussion (*e. g.*, recreation) or a straightforward explanation of current problems in a specific aspect such as housing. The core of each of these chapters is devoted to questions carefully prepared to guide planners of a community survey. "References for further study" conclude each chapter and a wealth of sources is listed in the excellent footnotes. A long list of public and private agencies from which information may be obtained is appended. The concluding chapters on conducting surveys and interpreting their results present many sound sociological concepts.

For the teacher planning units of study about his community the annotated questions and the up-to-date references cited will be very helpful. If the class plans a survey of some phase of its community life, the directions for conducting surveys should be thoroughly studied. For the teacher without training in economics or sociology the book provides a good deal of basic information in brief form. The chapters on housing and social insurance and public assistance are examples. For the more advanced students, carrying on individual "studies" or "projects," copies of this book should be available for guidance in finding information. The thorough discussion of various census reports and their use should prove invaluable for both students and teacher.

The author, professor of sociology at Alfred University and co-director of the Alfred University Area Study, has included many wise suggestions for laymen interested in surveying their community. Citizens' groups bent on investigation and action would save themselves and others concerned many headaches by adherence to his recommendations. The questions are carefully chosen to get at the real situations in the community, not merely to procure superficial data. The author cautions the reader that the questions must be adapted to the particular community under study and suggests ways of rewording and breaking down general questions to secure specific information or attitudes. The advisability of assistance by trained analysts, the importance of coordinating community planning, warnings against hasty and subjective conclusions, are all em-

phasized. Citizens without specialized training, but with honest intentions and average intelligence, should be able to conduct a worthwhile community survey by following the plans and advice given in *Studying Your Community*.

Brookline (Mass.) High School — CLARICE J. WEEDEN

COMMUNISM, CONFORMITY, AND CIVIL LIBERTIES. By Samuel A. Stouffer. (Garden City, New York: Doubleday and Company, Inc., 1955. 278 pp. $4.00.)

The machinery and personnel of two national research agencies, the American Institute of Public Opinion (Gallup poll) and the National Opinion Research Center of Chicago University, using the "probability" method and the same questionnaire at the same time in 1954, came up with some indications of attitudes with serious implications among identified groups of Americans. The responses of about 5000 "average" citizens and about 1500 local "leaders" form the basis for the text of the book. Although the absolute data collected independently by the two agencies differ somewhat, it is significant that the pattern of number and nature of responses is consistent relative to the main findings of both organizations.

If you are concerned about communism, conformity and civil liberties, or more specifically, if you are concerned about what the attitude of the younger generation may be regarding the right of a Communist to make a speech in their town, then the evidence offered in this book will probably strengthen your convictions or strongly urge you to reverse your position. In addition, you are likely to become more sensitive to the rights of people who challenge your traditions and who would offer dangerous ideas in the free market place. Your belief that formal schooling is the principal means for assuring "vertical mobility" in our society, and that healthy tolerance tends to increase among people with more education and more "horizontal mobility" may be reinforced.

On the other hand, if American Communists, Socialists, or atheists and what they may do are no particular concern of yours then the book should surprise and probably disturb you by indicating the climate of opinion among various groups of women, church goers, westerners, and college graduates regarding such nonconformists and how they should be treated in our society.

If you are a teacher, pastor, local community leader, or any such person in a position to do something about the alarming counter-action dispositions to such dangers as do exist, then the entire strategy of your efforts to enlighten, guide, lead, or direct may be based on the findings reported in this study.

This book reemphasizes the revolutionary changes which have taken place in this country regarding the level and quality of education. The positive effect of the impact of mass media on people is indicated to be one of many powerful social, technological, and economic forces making for tolerance.

For all citizens there is a hard challenge in this survey report to actively combat the intolerance which evidently results from logical inferences based on false assumptions derived from premises which are false. In short, do you know, accept, and stand ready to act in accordance with the basic premises of American liberty? Would you defend them? Where would you draw the line?

For sociologists and those interested in public opinion, attitudes, the art of asking questions, values, scaling, internal consistency, patterns of response and a good description of the probability method of sampling, the report contains significant material produced at a reported cost of $125,000 from the Fund for the Republic.

The Purdue Panel of Young People has reported disturbing evidence regarding the prevalence of a marked degree of intolerance among high school students. Is this a contradiction of a significant finding in the present study?

Answers to many questions *raised* by this survey as well as *better* answers to the questions used are now needed. Granted that this study is a "pioneering" effort, it would be regrettable if no attempts were made to follow up or accomplish segment studies. When "most of the seemingly intolerant... are good wholesome Americans," why do the significant differences in kinds of tolerance exist to the degree they are reported to among our neighbors, friends, youngsters, and fellow members?

The reader may be tempted to see implications in this study which were not intended. In fact the writer of this volume in his analysis of the data repeatedly cautions the reader regarding the limitations and possible dangers of false assumptions.

Part of the author's summary is appropriate to conclude this review because its tone permeates the book:

> The evils of Communism and the dangerous disregard of civil rights are so intertwined that their disentanglement cannot be easy. Yet disentangled they must be if the heritage of freedom is to be preserved.... Every mother, every father, every citizen has a duty to perform.

New Britain (Conn.) Teachers College WARREN W. FABYAN

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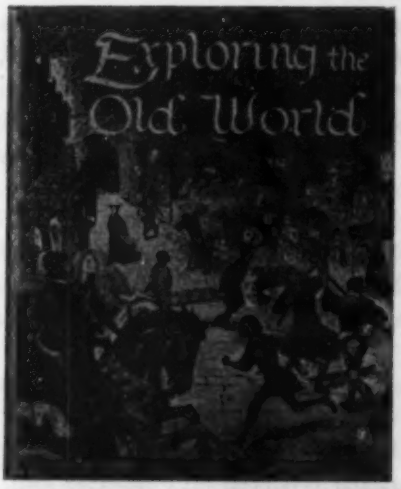

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